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Caroline Point
Estates and
Yacht Club

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
SUBDIVISION BUREAU

TED SCHWINDEN, GOVERNOR

STATE OF MONTANA

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Montana Historical Society, 225 N. Roberts, Helena, MT 59601
Committee on Zoning District 30, Box 4, Lakeside, MT 59922
Biological Station, University of Montana, Bigfork, MT 59911
Flathead Drainage 208 Project, 723 5th Ave. E., Kalispell, MT 59901
Somers Volunteer Fire Department, Somers, MT 59932
Lakeside School District #30, Lakeside, MT 59922
Pacific Power & Light Company, Box 250, Kalispell, MT 59901
Betty Beal, Box 147, Lakeside, MT 59922
Flathead Lake Protective Association, Box 4, Lakeside, MT 59922
Astle and Astle, 705 Main St., Kalispell, MT 59901
Millie Hanson, Box 73, Lakeside, MT 59922
Dr. Jack Stanford, Yellow Bay Biological Station, Bigfork, MT 59911

RE: Caroline Point Subdivision
Flathead County

Ladies and Gentlemen:

The enclosed preliminary environmental review has been prepared for Caroline Point Subdivison in Flathead County, and is submitted for your consideration. Questions and comments will be accepted until August 19, 1981. One extension of time not to exceed seven days will be granted upon request if there is sufficient reason for the request. All comments should be sent to the undersigned.

Sincerely,

Edward W. Casne, P.E., Chief

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Enclosures

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DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Cogswell Building, Helena, Montana 59601
(406)449-3946

PRELIMINARY ENVIRONMENTAL REVIEW

Division/Bureau Environmental Sciences Division/Subdivision Bureau

Project or Application Caroline Point Estates and Yacht Club

Description of Project The developers propose to build 84 condominium units on 28 acres overlooking Flathead Lake, 13 miles south of Kalispell. Water supply will be provided by a central water system supplied by wells drilled on the site. Sewage will be treated and disposed on site, with treatment by two aerated lagoons and a mixed media filter. Final treatment and disposal will be carried out in subsurface drainfields.

POTENTIAL IMPACT ON PHYSICAL ENVIRONMENT

	Major	Moderate	Minor	None	Unknown	Comments on Attached Pages
1. Terrestrial & aquatic life and habitats			X			3
2. Water quality, quantity and distribution		X				3,4,5 & 6
3. Geology & soil quality, stability and moisture			X			6
4. Vegetation cover, quantity and quality			X			6
5. Aesthetics					X	6
6. Air quality			X			6
7. Unique, endangered, fragile, or limited environmental resources		X				6
8. Demands on environmental resources of land, water, air & energy			X			6
9. Historical and archaeological sites					X	6

POTENTIAL IMPACTS ON HUMAN ENVIRONMENT

	Major	Moderate	Minor	None	Unknown	Comments on Attached Pages
1. Social structures and mores		X				7
2. Cultural uniqueness and diversity			X			7
3. Local and state tax base & tax revenue			X			7
4. Agricultural or industrial production			X			7
5. Human health			X			7
6. Quantity and distribution of community and personal income			X			7
7. Access to and quality of recreational and wilderness activities		X				7
8. Quantity and distribution of employment			X			7
9. Distribution and density of population and housing			X			7
10. Demands for government services			X			7 & 8
11. Industrial & commercial activity			X			8
12. Demands for energy			X			8
13. Locally adopted environmental plans & goals				X		8
14. Transportation networks & traffic flows		X				8

Other groups or agencies contacted or which may have overlapping jurisdiction None

Individuals or groups contributing to this PER. Contributors are noted in the Preliminary Environmental Review

Recommendation concerning preparation of EIS Recommend against the preparation of an Environmental Impact Statement.

PER Prepared by: Gary J. Wiens

Date: July 23, 1981

DHES/ESD-2

POTENTIAL IMPACT ON PHYSICAL ENVIRONMENT

1. The western third of the property is primarily open pasture and meadow, while the ground covering the rest of the site is predominantly fir, spruce and juniper with an understory of native grasses. The eastern third is the site of the former Elk's Rest Resort, consisting of a lodge, tavern and several cabins, all of which will be removed as part of the proposed development plan. The Elk's Rest facilities included a dock which has been rebuilt and, for the most part, replaced by a new dock.

The terrestrial life of the site is likely to consist of small mammals and birds. No critical wildlife habitat is involved, as this site is bordered by a cherry orchard, Highway 93, the Mission View Terrace Subdivision and Flathead Lake. Construction of 84 condominiums will cause those species intolerant of close human contact to leave, and species that tolerate and thrive in proximity to man will replace them. Native grasses, trees and shrubs will to a large degree be supplanted by domestic varieties, especially in those areas disturbed by construction.

Temporary disruption of the aquatic habitat has resulted from construction of the new dock and the recreation center near the lake. Increased turbidity was the observable result. Long-term effects may include a reduction of fish and waterfowl frequenting the area due to increased boating activity in the area. Some additional turbidity due to storm runoff from the site is also possible, however, the developer's consulting engineer has proposed a storm drainage and treatment system to mitigate the effects of highly turbid storm runoff. The system consists of collection inlets, gravity storm sewers, and detention ponds designed to retain the runoff long enough to allow most of the sediment to settle. The Department of Health and Environmental Sciences is mandated by law to review and approve the storm drainage facilities under the provisions of the Sanitation in Subdivisions Act. Under rules adopted by DHES the developer must provide design information showing that the waters of Flathead Lake will not be degraded by storm runoff.

2. Water quantity and distribution should not be affected. The only potential redistribution of water would result from the withdrawal of well water to supply the domestic and fire protection needs of the residents. This withdrawal is miniscule in comparison to the vast quantity of water found in Flathead Lake and the surrounding aquifer, and it is highly unlikely an impact could ever be detected.

The developer's engineer has presented plans to DHES for review of the water supply system. The two wells must supply a minimum of 197 gpm at peak flow to a gravity storage tank and a distribution system of six and eight inch diameter ductile iron pipe. The plans and supplemental information must meet the provisions of the Public Water Supply Act prior to DHES approval.

Three areas of potential impact on water quality are identified here. They are, first of all, the impact of construction on the shoreline or in the lake, secondly, the effects of storm runoff during and after construction, and finally, the possibility of groundwater contamination from the proposed sewage disposal system.

In recommending approval of a permit to construct the dock the Flathead Regional Development Office concluded,

> "The proposed dock facility with pile type construction shall have only minimum effect on the water quality. This type of construction shall not impede the current flow of water and, therefore, would not cause concentration of nutrients or pollutants behind the dock. Since the dock is only for private use of residents, no significant polluting effect from oil and gas spills from the boats is anticipated."

In the same report FRDO acknowledged that sedimentation could occur during construction of the dock. Long-term sedimentation will not occur since "breakwaters will reduce the wave actions at the lakeshore, causing only minimal erosion", as stated in the FRDO report. The Flathead County Commissioners concurred with the FRDO recommendation and issued the lakeshore construction permit.

The storm runoff detention system is described under item #1 of this Section. If properly designed, installed and maintained the system should prevent any degradation of Flathead Lake. The developer's propose to minimize erosion during construction by building temporary check dams, diverting stormwater away from construction areas, directing runoff to the proposed detention ponds, and installing a filter membrane material along drainage swales below construction sites. All construction practices will adhere to the DHES guidelines, "Road Construction and Maintenance to Prevent Water Pollution."

Sewage will be collected by a gravity collection system. Since the sewage treatment site is higher than much of the property, three lift stations will be needed to pump sewage to the first treatment process, two aerated sewage ponds operating in series and designed to remove 89% of the biochemical oxygen demand of the wastewater. The ponds are followed by a mechanical gravity flow mixed media filter, which will filter out suspended solids and algae before discharging effluent to subsurface drainfields located in the pasture area in the western third of the property. The filter may be bypassed in the winter when algae growth is limited. Effluent is applied to the drainfield at a rate of 0.8 to 1.0 gallons per square foot per day, depending on the percolation rate of the soil.

All lift stations will have two pumps, and emergency power will be provided by a generator in the filter building. The filter is cleaned by backwashing and surface washing, with the backwash water recycled through the second aerated pond.

Several factors lead to concern about the potential for water pollution. The soils of the drainfield site are permeable and are underlain by bedrock at depths varying from zero to ten feet or more. John R. Cloninger, Sr., soil conservationist for the Soil Conservation Service, examined the soils and filed a report to FRDO. In that report he stated,

> "The soil developed in the glacial till in this area is similar to the Whitefish series as described in the Upper Flathead Valley Area Soil Survey except it is not as dense and compact, contains a larger percentage of gravel and cobbles and is more permeable to movement of air and water."

Mr. Cloninger also notes,

> "The western part of the property contains three main limestone bedrock ridges that have some rock outcrops in places. This area has been mantled by glacial till with depths varying from less than two feet on the bedrock ridges to over 10 feet in the swales between ridges and the broader irregular areas. The main soil development has occurred in the glacial till."

Limestone is subject to channeling and should water contaminated with sewage reach a channel it may be piped directly to a well or Flathead Lake.

Nearby wells serve homes adjacent to Caroline Point. The closest one is north of a proposed drainfield site. Another well is located south of an alternate drainfield and serves nine homes.

In response to a request from DHES the developers hired Dr. Garry Grimestad, hydrogeologist, and Dr. A. T. Wallace, P. E., to prepare a report on the potential for groundwater pollution from wastewater disposal. They asserted that phosphorus, virus, bacteria and heavy metals would not move off the property and that nitrogen is the only contaminant of public health significance. They concluded that the expected increase in nitrate nitrogen at surrounding wells would be 2.3 mg./l., but added, "a few wells might demonstrate somewhate higher increases if localized piping through fissures prevents full dilution from occurring."

The generally accepted limit of nitrate nitrogen in drinking water is 10 mg./l. The wells in the Caroline Point area generally show low intrate levels, and it is unlikely that the sewage would elevate nitrates above the limit of 10 mg./l. However, should the effluent find its way to a water supply well, a significant increase in nitrates could occur.

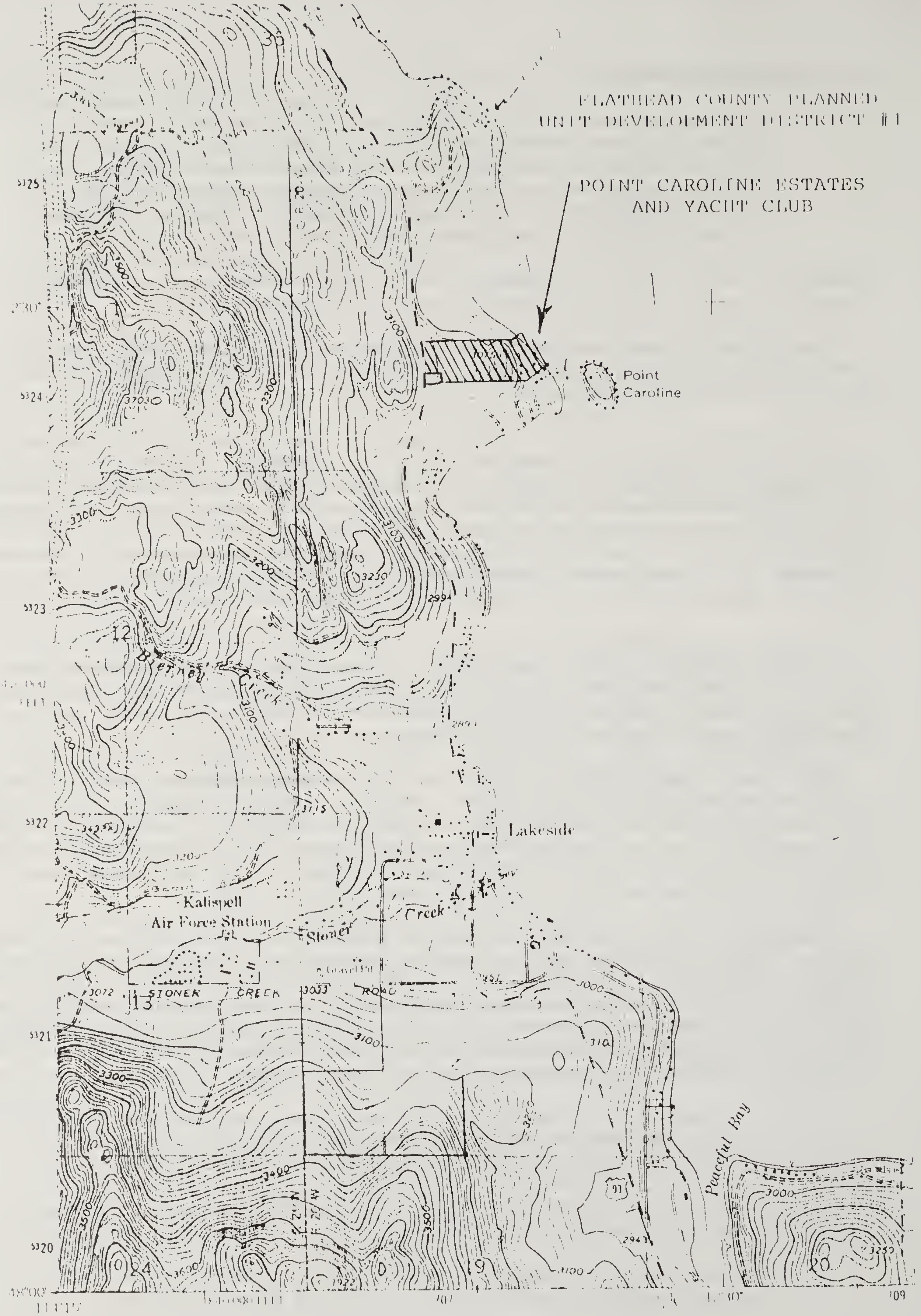
Dr. Jack A. Stanford of the University of Montana Biological Station responded to the report by Grimestad and Wallace. Stanford questioned some of the assumptions of Grimestad and Wallace regarding the calculation of nitrate loading on the aquifer, concluding that "the nitrogen balance analysis represents only a ballpark calculation of aquifer nitrogen loading." Stanford also challenged the conclusion that phosphorus would not migrate off the disposal site."

Phosphorus is the limiting nutrient of Flathead Lake. An increase in phosphorus leads to increased biological growth, where an increase in another nutrient will not since phosphorus is essential to algae growth and it is limited. Therefore, phosphorus increases are of concern. Stanford agrees with Grimestad and Wallace that the phosphorus concentration will be dramatically lowered by percolation through soils, but he states that the percolate could have a concentration of phosphorus an order of magnitude greater than that of Flathead Lake.

While this amount is insignificant in the lakewide mass balance it could lead to localized problems such as enhanced periphyton growth on the immediate lake shore.

Marc Spratt, director of the Flathead Drainage 208 Project, also responded to the Wallace and Grimestad report,

> "In conclusion, it appears that bacteria, viruses, nitrate-nitrogen and phosphorus as well as various salts could move



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> off site, representing a threat to human health and welfare. The most desirable alternative is connection to a municipal treatment facility. Lacking that, a carefully designed on site alternative needs to be developed that produces the highest quality effluent possible. A monitoring system should be installed and regularly sampled to verify that little, if any, material is moving off site. This system should sample the soil/bedrock interface below the infiltration bed."

Spratt also added that,

> "The best on site alternative is irrigation or a mounded system emphasizing evapotranspiration. Infiltration bed design should maximize upward water movement and minimize downward water movement."

Should there be insufficient area meeting the bedrock separation requirements of DHES the developers will have to present plans for an alternative means of disposal. DHES has suggested that the developers consider a subsurface irrigation system based on the consumption rate of vegetation. Connection to a properly operated municipal system is another acceptable alternative. Under the Sanitation in Subdivisions Act, DHES is obligated to "protect the quality and potability of water for public water supplies and domestic uses and to protect the quality of water for other beneficial uses, including uses relating to agriculture, industry, recreation and wildlife." Approval of the project can be granted only if a non-polluting means of sewage disposal is guaranteed.

3. Refer to items #1 and #2 of this section for information on soil stability. Other than the potential for erosion, which can be mitigated by proper construction techniques and stormwater runoff facilities, there are no other known potential impacts on geology and soil quality, stability and moisture.

4. Vegetative cover will change from pasture and second-growth forest to trees, shrubs and grasses typical of residential development.

5. Aesthetics is a highly subjective issue, and there is very little agreement as to whether any housing project detracts or enhances the beauty of a property. The FRDO concluded that replacement of the existing dock, which was in poor condition, would improve the appearance of the site. The aesthetic appeal of the project will depend in large part on the measures taken to keep natural foliage, restore damaged areas quickly and maintain buildings, docks and roads after occupancy.

6. No permanent impairment of air quality is anticipated.

7. The primary area of concern is the potential for impact on the water quality of Flathead Lake and the associated aquifer. This matter is discussed in item #2 of this section.

8. No significant demands on land, air and energy are anticipated. Please refer to item #2 of this section for water demands.

9. No historical or archaeological survey has been conducted on this site.

POTENTIAL IMPACT ON HUMAN ENVIRONMENT

1. The addition of 84 dwelling units on the Point Caroline peninsula will lead to an increased concentration of people in this area, and may result in a more diverse set of mores as more people move in. Crime rates may increase as burglars are attracted by new condominium units. The impact on the social structure will depend on how new residents are received by established residents and how they interact. This is a difficult phenomenon to predict.

2. No comments.

3. The developers estimate that the developed property will generate $60,000.00 in property taxes per year.

4. A small amount of pasture, less than one third of the 28 acres, will be removed from agricultural production by the development of this property.

5. In recommending approval to the County Commissioners, FRDO concluded that the marina poses no safety hazard to boat traffic, nor is any public nuisance probable. Please refer to item #14 of this section for comments on traffic safety and hazards.

6. Presumably many of the condominium units will be sold to non-residents. If so, the increase in population will result in an increased demand for goods and services. This impact will likely be felt by the stores, bars, restaurants and service stations of Somers and Lakeside.

7. An increased population results in increased demand for limited recreational services. Since many of the residents will vacation at Caroline Point they are likely to have much free time to use the recreational resources of Flathead Lake and the surrounding area.

8. Refer to the comments on item #6.

9. No comments.

10. The development is not expected to increase enrollment significantly as many of the residents will live in other communities and send their children to schools there. Bob Edwards, head teacher of Lakeside School District #30, said that the current enrollment of grades kindergarten through eighth grade is 90 pupils. This is much lower than the peak enrollment of 145 and indicates that considerable capacity is available.

Al Rierson, Flathead County Sheriff, stated that there is always an effect on law enforcement when growth occurs. He added, however, "I further feel that the absence of the former Elk's Rest Tavern on the premises in some ways will enhance law enforcement." He concluded that the project will not have significant impact on law enforcement in the county.

The Somers Rural Fire Department has a 3 to 5 minute response time to this area. They have 2 pumpers, a utility truck, a tanker with pump and, if necessary, a 4,000 gallon tanker. Francis Van Rinsum, chief, is confident they can provide good fire protection since the developers are building a water supply system capable of fire fighting flows.

11. See the comments for item #6 of this section.

12. Pacific Power and Light Company will provide electrical service. They have a main 3 phase distribution feeder along the west side of State Highway 93 which borders this project.

13. No comments.

14. The traffic problems are in two areas: increased traffic on U. S. Highway 93 and problems related to the access road running from Highway 93 to the proposed site.

Homer G. Wheeler, P. E., of the Department of Highways provided the following comments,

> "Our estimates indicate that between 420 and 588 trips per day would occur when the subdivision is fully developed and operating. This represents an increase of approximately 37% in the present traffic on U. S. 93. This is significant in itself. The increase is particularly significant when associated with certain adverse aspects of the point of access and the access road."

Wheeler Added,

> "The point of access of the present road from the proposal to U. S. Highway 93 is on a curve and at the crest of a hill. The road approach is on a steep grade and sight distance of visibility of oncoming traffic is poor. There are two short roads each side of the road approach that contribute to diverse movement to and from U. S. Highway 93. This overall configuration provides the potential for increased accidents as travel to and from Caroline Point increases."

Wheeler suggested the addition of acceleration and deceleration lanes, controlled access to Highway 93 and access and approach improvements as measures to mitigate the adverse effects on traffic safety.